



Lesson 3

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M Is for Mountain

This lesson focuses on mountains as one ecosystem in California. By learning about the features of mountain ecosystems and the plants and animals that live on mountains, students become more familiar with the characteristics of a mountain environment.

Students also discover that some human basic needs are met through resources obtained from mountain ecosystems. A “big idea” of this lesson is that mountains are a major source of water for humans and other living things, especially forests. In some parts of California, mountains are covered by forests.

Students are actively involved in this lesson completing sentence stems about animals and their habitats, helping construct a concept map, and adding information to their individual books. Concepts introduced and/or reinforced include connections within an ecosystem and across ecosys-

tems, weather changes, and humans’ dependence on natural goods and systems. English-Language Arts skills supported include following words from left to right, describing places and animals, and using letters and phonetically spelled words to write about objects or events.



Background

Dramatic changes in **elevation** and varied climatic zones contribute to diverse plant and animal life in California's mountain ecosystems. The mountain ecosystem presents special challenges for both plants and animals. At higher elevations, mountain habitats have long, cold, snowy winters and short, wet, cloudy summers. Mt. Whitney, the highest mountain in California, has snow on its **peak** year-round.

A range of plant life exists on mountains, from trees to shrubs to lichens and mosses. Soil on some mountains is thin and stony, and conditions are dry, windy, and cold. In other California ranges, the windward side of mountains may have more precipitation than the lowlands. Especially at higher elevations, plants grow slowly and hug the ground. Above the **tree line**, which generally begins at 10,000 feet, large plants such as trees can not survive.

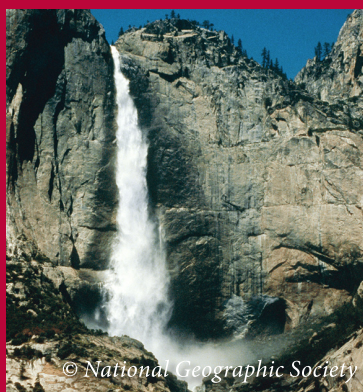
Some animals spend only part of the year on the mountain, as food is scarce and the climate challenging during the winter. Other animals hibernate through the winter on or near

Learning Objective

List different habitats (ecosystems) that are found in mountains, rivers, oceans, valleys, deserts, and in their local area.

Name some of the plants and animals that live in their local area.

Identify resources (goods and ecosystem services) that people use in everyday life (e.g., food, air, water, clothing).



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the mountains. Hibernation is an adaptation that allows animals to survive the time of the year when food is scarce. A small number of especially hardy animals continue to be active during the winter. Some change color from season to season to better blend in with their surroundings.

Many rodents on high mountains (like marmots and voles) live in underground tunnels. They **hibernate** in these tunnels but come out to search for food among the rocks. Their earth-tone colors serve as camouflage as they take shelter in the rocks. Eagles and some other birds of prey use cliff caves as nesting and resting sites. Their ability to fly to great heights gives them an advantage as they search for food when prey is scarce.

For humans, steep mountain slopes and the harsh winters make activities like farming and traveling difficult. While mountains are sparsely populated, humans do use resources from the mountains. Forestry and mining are major industries, and mountains provide a great deal of the water used by humans.



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Key Vocabulary

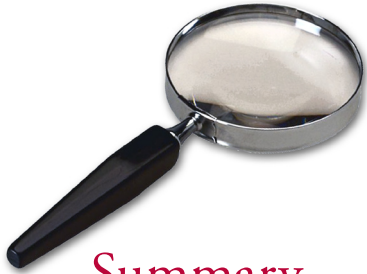
Elevation: Height above the ground.

Hibernate: To pass winter in a state of deep rest.

Peak: The pointed summit of a mountain.

Tree line: The elevation above which trees do not grow.

Toolbox



Summary of Activities

Students study pictures of mountain animals and paste animal cutouts at different elevations of a mountain. They help develop a concept map about a mountain ecosystem and gather information to determine if their community is on or near a mountain.



Instructional Support

See Unit Resources, pages 20-21

Prerequisite Knowledge



- Students should be able to participate in a group discussion by relating comments to the discussion topic and listening to what others say.
- Students must be able to speak clearly enough to be understood by others.
- Students need to understand simple oral directions and be able to gather information from pictures.

Advanced Preparation



Make copies:

Make copies as indicated in the Activity Masters section below.

Cut out animals:

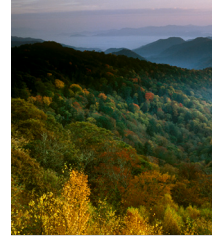
Cut out the line drawings of animals provided as an Activity Master (see below).

Draw mountain outline:

Draw the outline of a mountain on a large sheet of chart paper and mount this on the wall.

Prepare Visual Aids:

Produce materials as indicated in the Visual Aids section.



Materials Needed



E Is for Earth books:
From Lesson 1

Class Supplies:
Chart paper, crayons or colored pencils, glue, markers, pencils

Activitiy Masters:
See below

Visual Aids



Big Book:
The World Around Me

Map:
Relief Map of California, page 93

Photo cards:
Mountain animals, pages 99-103

Duration



Preparation time:
10-15 min.
Instructional time:
55-60 min.

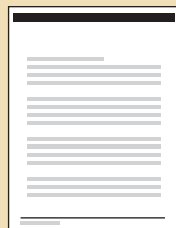


Safety Notes
None

Activity Masters



What Animal Is This?
Page 85
One per student



Mountain Cutouts
Page 86
One per class



Mountain Assessment Checklist
Page 88
One per class

Procedures

Step 1

Show the students the “M Is for Mountain” page in *The World Around Me* (Lesson 1 Visual Aid). Introduce the terms “peak,” “tree line,” and “elevation” in discussing some of the features of mountain ecosystems. Write these words on the board and add simple line drawings to illustrate what they mean. To help students understand the word “elevation,” tell students that the ceiling is at a higher elevation than the floor. Encourage them to come up with additional sentences about different elevations (for example, my head is at a higher elevation than my feet). Draw students’ attention to different features of a mountain at different elevations (snow, tree line).

Step 2

Point out the animals shown on the page and draw students’ attention to where they live. Share additional information about specific animals provided in the lesson background. For example, tell students about bears hibernating, eagles flying high to hunt for food below, mountain hares changing color in winter. Point out the human activities—logging and berry-picking—depicted in the picture. Ask, “What do people get from mountains that helps them survive?” (*Wood, food, water*)

Step 3

Pair students and give each pair a photo card and a cutout of an animal that lives on the mountain. After they study the picture, have them name and describe the animal and what it uses for shelter or where it builds a home (cave, tree, ground, and so on). Write the name of each animal on the board. (*Students will need the names for completing written work in the next part of the lesson.*) Have students identify one of the challenges their animal faces living on a mountain and at least one of the resources it uses to meet its basic needs (food, water, shelter). Have the students glue their cutout of the animal on the outline of a mountain you have drawn on butcher or chart paper. They should place their cutout according to the elevation (top, middle, bottom) or habitat where they think the animal might live most of the time.

Step 4

Distribute the *What Animal Is This?* (Lesson 3 Activity Master) worksheet. Students complete this worksheet by writing their names at the top and finishing three sentences about the animal depicted on their photo card. Call attention to the names of the animals listed on the board to help students with spelling. Encourage students to use “invented spellings” of words not on the board. As students finish, have them raise their hands. Listen to each student read what he or she has written on the worksheet. As students wait for others to finish, have them draw a picture of their animal and its nest or where it goes for shelter. Students should use the back of their worksheet to draw their pictures. They can share their drawings with each other.



Step 5

Use the students' ideas to develop a concept map depicting some of the parts and connections of a mountain ecosystem. (See the example in *The World Around Me - Part 2.*) The following are questions that can be used to elicit student contributions to the concept map:

- What are some words you could use to describe a mountain? (*High elevation, peaked, water source, snowy, other answers.*)
- Where do some animals get shelter on the mountain? (*In underground tunnels, in rocks and caves.*)
- Where do they go for food? (*They search for food in the rocks, and plants above and below the tree line.*)
- How are parts of the mountain ecosystem connected? (*Predator/prey relationships; water; plants as food and shelter for animals.*)

Step 6

Examine the **Relief Map of California** (Lesson 2 Visual Aid) and have students identify the mountains closest to their city or town. Have students describe the pattern of the mountains in the state. Use leading questions to stimulate a discussion about the natural resources people get from the mountains to use in everyday life (food, water, air, wood, paper):

- What do you use in everyday life that might have come from a mountain or from the parts of the mountain ecosystem? (*Rocks; water; animals; products from trees and other plants, such as wood, paper, berries.*)
- How does what you know about rivers relate to what you now know about mountains? (*Water in rivers may come from snow melting in the mountains as the weather becomes warmer in the spring and summer.*)

Step 7

Return students' individual *E Is for Earth* (Lesson 1 Activity Master) books. Have them turn to the mountain page and add (by drawing) some parts of a mountain ecosystem (for example, plants, animals, rocks, snow/water). Give them time to talk about their drawings, encouraging them to speak in complete, coherent sentences. Collect the books when students have completed their work.

Lesson Assessment

Instructions

Description:

Student assessment for this lesson is embedded throughout the procedures. Embedded assessment activities consist primarily of inquiry questions related to the EEI Learning Objectives. All students should participate in the discussion, and their individual responses should be evaluated for accuracy. Students should be asked to explain some of their ideas to check for any misconceptions.

Instructions:

Have students complete the following, one-on-one with the teacher or another adult prepared to assess students' responses and provide feedback:

1. Describe an animal that lives on the mountain. Match the animal to the habitat where it might be found.
2. Name one resource found on a mountain that an animal could use to meet its basic needs.
3. How are conditions on the mountain different in summer and winter? How would these differences affect animals?
4. What resources from the mountain do humans use in everyday life?

Suggested Scoring

Use the **Mountain Assessment Checklist** (Lesson 3 Activity Master) to record students' performance.

Mountain Assessment Checklist (Lesson 3 Activity Master)

Student's Name	Can describe a mountain animal, plant or habitat	Can identify how a mountain- dwelling animal's needs are met	Can identify how parts of a mountain ecosystem are connected	Can identify how mountain resources are used by people	Can use vocabulary words in meaningful context
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